

**Building 1297, Lunar Landing Research Facility /  
Impact Dynamics Research Facility  
NASA LaRC**

When President John F. Kennedy confidently predicted in 1961 that the United States would land a man on the Moon by the end of the decade, the task of implementing what seemed to be a wildly ambitious goal fell to the engineers of the National Aeronautics and Space Administration (NASA). The success of the chosen lunar-orbit rendezvous (LOR) strategy ultimately depended on whether the astronauts could learn to safely land the Lunar Excursion Module (LEM) on the Moon's surface and return into orbit to dock with the mother ship. A major obstacle in designing a training procedure, however, was that the LEM would handle far differently in the Moon's atmosphere, with 1/6<sup>th</sup> the gravitational pull of Earth's. The solution came in the form of the Lunar Landing Research Facility (LLRF), a training simulator that allowed NASA engineers to study the complex lunar landing process and give the Apollo astronauts critical hands-on pilot training in the LEM. Completed in 1965 at a cost of \$3.5 million, the most obvious feature of the LLRF was its enormous gantry, an A-frame steel structure measuring 400 feet long by 240 feet high. The LLRF simulated lunar gravity on the LEM through an overhead partial-suspension system that counteracted all but 1/6<sup>th</sup> of the Earth's gravitational force, and allowed the vehicle to fly unobstructed within a relatively large area. The LLRF also was used as a lunar-walking simulator, with subjects walking on inclined planes while suspended by a system of slings and cables.

Until the end of the Apollo program in 1972, the LLRF was used to train 24 astronauts for lunar missions, including Neil A. Armstrong and Edwin E. "Buzz" Aldrin, Jr., of Apollo 11, the first men to walk on the Moon. Armstrong offered what was perhaps the greatest tribute to the importance of the LLRF in the success of the Apollo program. When asked what it was like to land on the Moon, he replied: "Like Langley."

Although the end of manned lunar missions made the LLRF redundant by the early 1970s, NASA quickly found a new use for this Langley landmark, converting it into a full-scale aircraft crash test facility. Redesignated the Impact Dynamics Research Facility (IDRF), it was used to conduct important research on aircraft and other vehicles between 1974 and 2003.

The historical significance of the LLRF and its many contributions to the U.S. space program were formally recognized when the facility was designated a National Historic Landmark in 1985. The facility is now called the Landing and Impact Research Facility (LandIR) and is actively supporting the Agency's new mission, the Vision for Space Exploration.